Techniques needed and plant shape

Phylum: Rhodophyta; Order: Gigartinales; Family: Peyssonneliaceae

§ a brown-red sea fan

1. plants 20-50mm long, lying flat on rocks, attached basally by rhizoids, with spreading, flat-branched narrow blades, fanning out at the tips
2. blades dark brown-red on top, coated with yellowish rhizoids below

Islands of the West Coast and one record from Kangaroo I., S Australia

a deep water species (to 35m) on rock

1. cut a radial cross section through a blade to find a prominent basal layer of cells giving rise to:-
   - rhizoids on the underside at right angles, the first cell (hypobasal) of which lies within the blade sheath
   - threads (assurgent filaments) of many cells on the upper side initially at about 30º but becoming almost vertical
   - prominent, large, spindle-shaped, bright cells (cystoliths) in lower thread parts
2. if possible cut a section through obscure patches (nemathecia) on upper blade surfaces of fertile plants to find:-
   - in female plants, chains of carposporangia amongst fine hairs
   - in sporangial plants, tetraropangia divided in a cross-shaped (cruciate) pattern amongst fine hairs

Similar Species

Peyssonnelia novae-hollandiae, but that species has larger tetraropangia, carposporangia in pairs, cross threads amongst the many rising upwards (assurgent filaments) and no bright cystoliths

Description in the Benthic Flora

Part IIIA, pages 152, 158-160

Details of Anatomy

Radial cross sections of Peyssonnelia foliosa stained blue and viewed microscopically to show:

1. the basal cell layer (bas l), basal cell of a rhizoid within the blade sheath (hypobasal cell, hyp c), rhizoids (rh) and threads (assurgent filaments, ass fil), initially growing upwards at about 30º angle (A34050 slide 11251)
2. a female nemathecium (fem nem) (A24047 slide 11270)
3. detail of chains of carposporangia (ca sp) amongst hairs (ha) in a female nemathecium (A56662 slide 10579)

Descriptive names are inventions to aid identification, and are not commonly used.

§ name used in Edgar, G. *Australian Marine Life, 2nd Ed.* (2008) for *Peyssonnelia* species

“Algae Revealed” R N Baldock, S Australian State Herbarium January 2010
4. **Peyssonnelia foliosa**  
Womersley, (A33629), 20-25m deep on a horizontal rock face, Pearson I., South Australia, showing the dark upper surface and lighter rhizoid covered underside (arrowed)

5. **Peyssonnelia foliosa** (A59300)  
32m deep at The Hotspot, W of Flinders I., South Australia

6. 7. two magnifications (A59300 slide 11260) of radial cross sections of sporangial patches (nemathecium, *t sp nem*) stained blue and viewed microscopically
   6. a plant blade with whole nemathecium (*t sp nem*), bright cells (cystoliths, *cyst l*) in lower parts of upward growing threads and numerous rhizoids (*rh*)
   7. tetrasporangia (*t sp*) divided in a cross (cruciate) pattern amongst fine hairs (*ha*)

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name used in Edgar, G. Australian Marine Life, 2nd Ed. (2008) for *Peyssonella* species

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